

Is GPA or ACT Composite more related to student on-time graduation in NDUS Community Colleges?

Introduction

For the purposes of studying this question, on-time graduation was defined to be a student graduating from an NDUS Community College with an Associate Degree within three years of their first enrollment after high school graduation. NDUS Community Colleges are Bismarck State College, Dakota College at Bottineau, Lake Region State College, North Dakota State College of Science, and Williston State College.

Is there a significant difference between using one type of GPA over another?

For the investigation of correlations between the various GPA calculation methods, any districts previously identified as having incomplete course codes were removed. Also, any students possessing a school GPA higher than 5 were removed from consideration.

	School GPA	State GPA	State Core GPA	NDUS Core GPA
School GPA		0.992	0.922	0.906
State GPA	0.992		0.923	0.907
State Core GPA	0.922	0.923		0.965
NDUS Core GPA	0.906	0.907	0.965	

Table 1: Correlations among various GPA Calculation Methods

From the correlation matrix in Table 1, it is clear there is very little difference between one GPA calculation method and the next. If one GPA calculation method is useful for a particular application, all should be nearly equally as useful. For the purposes of further study, focus will be placed on NDUS Core GPA, since that seems of primary interest to the University System.

Is ACT Composite or a particular sub-level score used?

Since ACT Composite has been used previously in Pathways calculations, it was also used in the analysis here. No sub-level scores were used.

The data set for this question is a sample of students who graduated from a North Dakota high school between 2008 and 2010 and were enrolled in a NDUS community college immediately following graduation. Any students graduating from schools identified as having incomplete course codes were excluded from study. The total sample size was 1,893 students.

First, the correlation between a student's ACT composite score, NDUS Core GPA, and on-time Associate Degree completion were examined.

	NDUS Core GPA	ACT Composite	On-Time Degree Completion
NDUS Core GPA		0.537	0.335
ACT Composite	0.537		0.178
On-Time Degree Completion	0.335	0.178	

Table 2: Correlation for On-Time Degree Completion

Judging from the correlations in Table 2, it appears that NDUS Core GPA has a stronger relationship (0.335) with on-time Associate Degree completion than ACT Composite (0.178). To further study their relative usefulness in predicting student success, a binary logistic regression analysis was performed. The response variable was whether or not the student successfully completed their Associate Degree on-time (1/0), with ACT Composite and NDUS Core GPA used as possible predictor variables.

	Coefficient	S.E.	Significance
NDUS Core GPA	0.947	0.078	<0.001
ACT Composite	-0.007	0.016	0.660
Constant	-2.707	0.272	<0.001

Table 3: Logistic Regression Coefficients

While ACT Composite may be a significant predictor of student success alone, it appears it does not add any significant additional information to the model aside from what NDUS Core GPA offers. Therefore, the conclusion could again be reached that NDUS Core GPA is more indicative of future student success than ACT Composite.

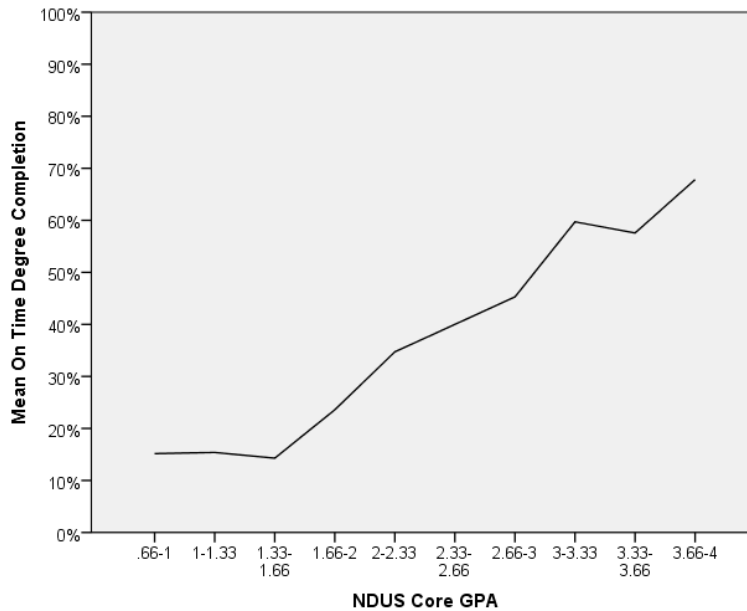


Figure 1: On-Time Graduation Rates by NDUS Core GPA

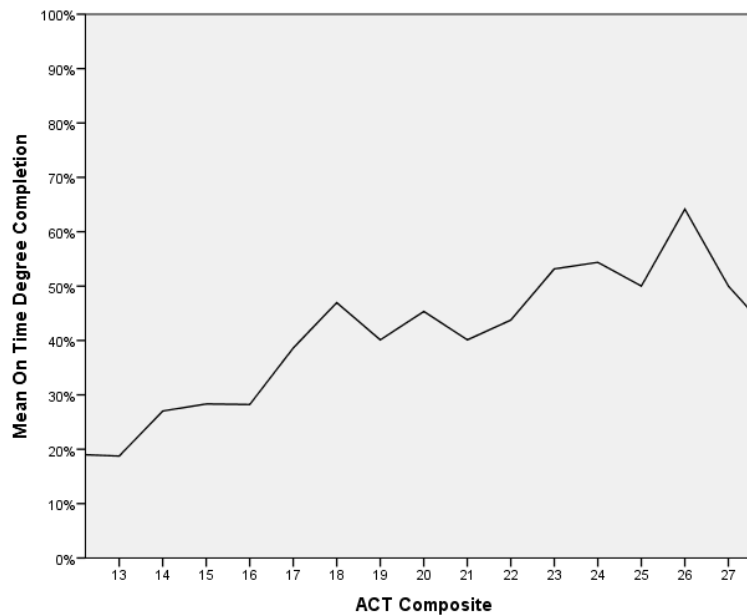


Figure 2: On-Time Graduation Rates by ACT Composite

Finally, comparing the graphs of on-time degree completion rates by both NDUS Core GPA and ACT Composite, it can be seen that they both have a positive effect on on-time completion of an Associate Degree. However, it can also be seen that the effect of increasing NDUS Core GPA is much more pronounced (and consistent) than that of the effect of increased ACT Composite score. This is consistent with the results shown from the correlation matrix created earlier and only continues to confirm that **NDUS Core GPA is more related to on-time Associate Degree completion than ACT Composite.**